What is claimed is:

1. A semiconductor device comprising:

a growth layer of a first conductivity type;

a rectangular ring-shaped guard groove surrounding a part having at least one region of a second conductivity type formed in said growth layer; and

a guard region of the second conductivity type provided in said guard groove,

an outer circumferential auxiliary diffusion region of the second conductivity type connected to four corners of outer circumferential portion of said guard region to add a round region.

2. A semiconductor device comprising:

a growth layer of a first conductivity type;

a rectangular ring-shaped guard groove surrounding a part having at least one region of a second conductivity type formed in said growth layer; and

a guard region of the second conductivity type provided in said guard groove,

a ring-shaped outer circumferential auxiliary diffusion region of the second conductivity type connecting to said guard region, wherein the outer circumferential auxiliary diffusion region surround said guard region, and having its four corners round shape at an outer circumferential portion thereof.

3. The semiconductor device according to claim 1 wherein

a plurality of said guard grooves are concentrically provided, each of said guard grooves being connected with said outer circumferential auxiliary diffusion region.

4. The semiconductor device according to claim 2, wherein

a plurality of said guard grooves are concentrically provided, each of said guard grooves being connected with said outer circumferential auxiliary diffusion region.

5. A semiconductor device, comprising:

a growth layer of a first conductivity type;

a rectangular ring-shaped guard groove concentrically surrounding a part having at least one region of a second conductivity type formed in said growth layer;

a guard region of the second conductivity type provided in said guard groove;

a ring-shaped outer circumferential auxiliary diffusion region of the second conductivity type in contact with an outer circumference of said guard region and having its four corners at an outer circumferential portion thereof rounded; and

a ring-shaped inner circumferential auxiliary diffusion region of the second conductivity type in contact with an inner circumference of said guard region.

6. The semiconductor device according to claim 5, wherein said inner circumferential auxiliary diffusion region has its four corners rounded at an inner circumferential portion thereof.

7. The semiconductor device according to claim 6, wherein a plurality of said guard grooves are concentrically provided, and

each of said guard grooves is connected with said outer circumferential auxiliary diffusion regions and said inner circumferential auxiliary diffusion regions.

8. The semiconductor device according to claim 1,

wherein a {100} plane is exposed at four side faces and bottom face of said guard groove, and said guard region is made of a semiconductor single crystal epitaxially grown from the side faces and the bottom faces of said guard groove.

9. The semiconductor device according to claim 2,

wherein a {100} plane is exposed at four side faces and bottom face of said guard groove, and said guard region is made of a semiconductor single crystal epitaxially grown from the side faces and the bottom faces of said guard groove.

10. The semiconductor device according to claim 5, wherein a {100} plane is exposed at four side faces and bottom face of said guard groove, and said guard region is made of a semiconductor single crystal epitaxially grown from the side faces and the bottom faces of said guard groove.

11. The semiconductor device according to claim 1, wherein said outer circumferential auxiliary diffusion region is formed by diffusing an impurity of the second conductivity type from the surface of said growth layer.

12. The semiconductor device according to claim 2, wherein said outer circumferential auxiliary diffusion region is formed by diffusing an impurity of the second conductivity type from the surface of said growth layer.

13. The semiconductor device according to claim 5, wherein said outer circumferential auxiliary diffusion region is formed by diffusing an impurity of the second conductivity type from the surface of said growth layer.

14. The semiconductor device according claim 1, wherein said outer circumferential auxiliary diffusion

region is formed shallower than the depth of said guard region.

15. The semiconductor device according claim 2, wherein said outer circumferential auxiliary diffusion region is formed shallower than the depth of said guard region.

16. The semiconductor device according claim 5, wherein said outer circumferential auxiliary diffusion region is formed shallower than the depth of said guard region.

17. The semiconductor device according claim 1, wherein a cell for a MOS transistor is formed in the part surrounded by said guard grooves, said MOS transistor having a base region of the second conductivity type, a source region of the first conductivity type formed in said base region, a gate insulating film in contact with said base region, and a gate electrode in contact with said gate insulating film.

18. The semiconductor device according claim 2, wherein a cell for a MOS transistor is formed in the part surrounded by said guard grooves, said MOS transistor having a base region of the second conductivity type, a source region of the first conductivity type formed in said base region, a gate insulating film in contact with said base region, and a gate electrode in contact with said gate insulating film.

19. The semiconductor device according claim 5, wherein a cell for a MOS transistor is formed in the part surrounded by said guard grooves, said MOS transistor having a base region of the second conductivity type, a source region of the first conductivity type formed in said base region, a gate insulating film in contact with said base region, and a gate electrode in contact with said gate insulating film.

20. The semiconductor device according to claim 1, wherein in the part surrounded by said guard grooves, a Schottky electrode to form a Schottky junction with said growth layer is provided.

21. The semiconductor device according to claim 2, wherein in the part surrounded by said guard grooves, a Schottky electrode to form a Schottky junction with said growth layer is provided.

22. The semiconductor device according to claim 5, wherein in the part surrounded by said guard grooves, a Schottky electrode to form a Schottky junction with said growth layer is provided.